

CLAIMS

What is claimed is:

1. A dialyzer header cleaning device comprising:

a housing having two opposed ends and delimiting a
5 passage that extends in a flow direction between the two
ends;

a connecting element disposed at a first end of
said housing for connection to the header; and

a flow directing element having a fluid inlet end
10 retained in said passage and a fluid outlet end, said flow
directing element having a cleaning position in which said
fluid outlet end extends into the header when said first end
of said housing is connected to the header, wherein

said flow directing element is constructed to
15 rotate about an axis that extends in the flow direction in
response to a flow of liquid between said fluid inlet end
and said fluid outlet end, and to eject at least one liquid
stream from said fluid outlet end in a direction transverse
to the flow direction.

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2. The cleaning device of claim 1 wherein said flow
directing element is a needle that tapers from said fluid
inlet end towards said fluid outlet end and that has a fluid
flow path that extends from said fluid inlet end to said
25 fluid outlet end.

3. The cleaning device of claim 2 wherein said needle has a circular outer wall and an outlet opening via which the fluid streams are ejected in a direction tangential to said outer wall.

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4. The cleaning device of claim 3 wherein said needle has formations that project into the fluid flow path and that are configured to produce forces tending to rotate said needle in response to flow of liquid through the fluid flow path.

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5. The cleaning device of claim 2 wherein said needle has formations that project into the fluid flow path and that are configured to produce forces tending to rotate said needle in response to flow of liquid through the fluid flow path.

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6. The cleaning device of claim 2 wherein said needle has openings in proximity to said fluid inlet end for permitting liquid to flow from the fluid flow path to a region surrounding said needle.

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7. The cleaning device of claim 1 wherein said passage tapers in the flow direction and said flow directing element is movable parallel to the flow direction between the cleaning position and a back flush position in response to flow of fluid through said passage from said flow outlet end

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toward said fluid inlet end to provide a back flush flow path through said passage and around said flow directing element.

5 8. The cleaning device of claim 7 wherein said flow directing element is a needle that tapers from said fluid inlet end towards said fluid outlet end and that has a fluid flow path that extends from said fluid inlet end to said fluid outlet end.

10 9. The cleaning device of claim 8 wherein said needle has openings in proximity to said fluid inlet end through which liquid can flow when said needle is in the back flush position.

15 10. A dialyzer header cleaning device comprising:
 a housing having two opposed ends and delimiting a passage that extends in a flow direction between the two ends;

20 a connecting element disposed at a first end of said housing for connection to the header; and

 a flow directing element having a fluid inlet end retained in said passage and a fluid outlet end, said flow directing element having a cleaning position in which said
25 fluid outlet end extends into the header when said first end of said housing is connected to the header, wherein

said flow directing element is movable parallel to the flow direction between the cleaning position and a back flush position in response to flow of fluid through said passage from said flow outlet end toward said fluid inlet end to provide a back flush flow path through said passage and around said flow directing element.

11. The cleaning device of claim 10 wherein said passage tapers in the flow direction.

12. The cleaning device of claim 11 wherein said flow directing element is a needle that tapers from said fluid inlet end towards said fluid outlet end and that has a fluid flow path that extends from said fluid inlet end to said fluid outlet end.

13. The cleaning device of claim 12 wherein said needle has openings in proximity to said fluid inlet end through which liquid can flow when said needle is in the back flush position.

14. The cleaning device of claim 10 wherein said housing is manually rotatable about an axis that extends in the flow direction when said connecting element is connected to the header and fluid is flowing through said passage.